

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

SZSAR-TRF-01 Rev. A/0 May15,2023

Report No.: SZCR240900362306

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SAR TEST REPORT

Application No.: SZCR2409003623AT

Applicant: SZ DJI Osmo Technology Co., Ltd.

Address of Applicant: Room S11, Floor 23, Tower 1, DJI Sky City, No. 55 Xianyuan Road, Xili Community, Xili Street, Nanshan District, Shenzhen, China.

Manufacturer: SZ DJI Osmo Technology Co., Ltd.

Address of Manufacturer: Room S11, Floor 23, Tower 1, DJI Sky City, No. 55 Xianyuan Road, Xili Community, Xili Street, Nanshan District, Shenzhen, China.

EUT Description: Osmo Action 6

Model No.: AC006

Trade Mark: DJI

FCC ID: 2ANDR-AC00624

Standards: FCC 47CFR §2.1093

Date of Receipt: 2024-10-16

Date of Test: 2024-10-18 to 2024-10-27

Date of Issue: 2024-10-31

Test Result :	PASS *
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* In the configuration tested, the EUT detailed in this report complied with the standards specified above.



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Revision Record			
Version	Description	Date	Remark
01		2024-10-31	Original

Authorized for issue by:			
		Darren Yuan	
		Darren Yuan/Project Engineer	
		Eric Fu	
		Eric Fu/Reviewer	



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TEST SUMMARY

Test Summary		
Frequency Band	Max Reported SAR1g(W/kg)	Max Reported SAR10g(W/kg)
	Head & Body	Extremity
WI-FI (2.4GHz)	0.314	0.782
WI-FI (5GHz)	1.545	1.751
BT	0.063	0.179
Maximum Simultaneous SAR	0.743	1.066
SAR Limited(W/kg)	1.6	4.0



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1 General Information

1.1 General Description of EUT

Product Name:	Osmo Action 6		
Model No.:	AC006		
Trade Mark:	DJI		
Product Phase:	production unit		
Device Type:	portable device		
Exposure Category:	uncontrolled environment / general population		
S/N:	9KRDU950000013		
Hardware Version:	V1.0		
Software Version:	V1.0		
Antenna Type:	Integral Antenna		
Device Operating Configurations:			
Modulation Mode:	WIFI: DSSS, OFDM, OFDMA; BT: GFSK, $\pi/4$ DQPSK, 8DPSK		
Frequency Bands:	Band	Tx(MHz)	Rx(MHz)
	WIFI 2.4G	2412~2462	2412~2462
	WIFI 5G	5150~5250	5150~5250
		5725~5850	5725~5850
BT	2402~2480	2402~2480	
RF Cable:	☒ Provided by applicant ☐ Provided by the laboratory		
Battery Information:	Model:	BCX204-1950-3.87	
	Normal Voltage:	3.87V	
	Rated capacity:	1950mAh/7.55Wh	
	Manufacturer:	Guangdong Highpower New Energy Technology Co., Ltd.	
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1.2 DUT Antenna Locations

Please refer to Appendix D



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1.3 Test Specification

Identity	Document Title
FCC 47CFR §2.1093	Radio frequency Radiation Exposure Evaluation: Portable Devices
IEEE Std C95.1 – 1992	IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz
IEEE Std. 1528-2013	Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques
KDB 447498 D04 v01	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
KDB 865664 D01 v01r04	SAR Measurement Requirements for 100 MHz to 6 GHz
KDB 865664 D02 v01r02	RF Exposure Compliance Reporting and Documentation Considerations
KDB 248227 D01v02r02	SAR GUIDANCE FOR IEEE 802.11 (Wi-Fi) TRANSMITTERS



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1.4 RF exposure limits

Human Exposure	Uncontrolled Environment General Population	Controlled Environment Occupational
Spatial Peak SAR* (Brain*Trunk)	1.60 mW/g	8.00 mW/g
Spatial Average SAR** (Whole Body)	0.08 mW/g	0.40 mW/g
Spatial Peak SAR*** (Hands/Feet/Ankle/Wrist)	4.00 mW/g	20.00 mW/g

Notes:

* The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time

** The Spatial Average value of the SAR averaged over the whole body.

*** The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation.)



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1.5 Test Location

All tests were performed at:

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No tests were sub-contracted.

1.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• VCCI (Member No. 1937)

The 3m Fully anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• FCC –Designation Number: CN1336

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1336. Test Firm Registration Number: 787754.

• Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.



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1.7 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25 °C
Relative humidity	Min. = 30%, Max. = 70%
Ground system resistance	< 0.5 Ω
Ambient noise is checked and found very low and in compliance with requirement of standards. Reflection of surrounding objects is minimized and in compliance with requirement of standards.	



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2 SAR Measurements System Configuraion

2.1 The SAR Measurement System

This SAR Measurement System uses a Computer-controlled 3-D stepper motor system (SPEAG DASY professional system). A E-field probe is used to determine the internal electric fields. The SAR can be obtained from the equation $SAR = \sigma (|E|^2) / \rho$ where σ and ρ are the conductivity and mass density of the tissue-Simulate.

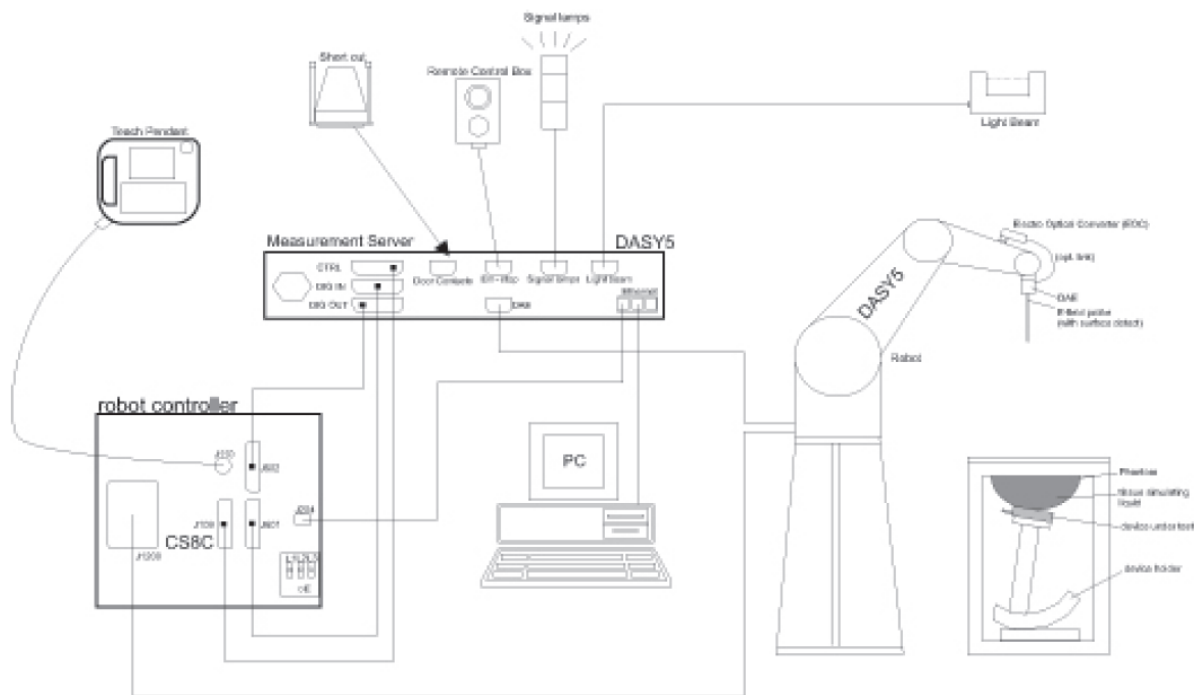
The DASY system for performing compliance tests consists of the following items:

A standard high precision 6-axis robot (Stabile RX family) with controller, teach pendant and software. An arm extension for accommodation the data acquisition electronics (DAE).

A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.

A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.

The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.



F-1. SAR Measurement System Configuration

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- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows system.
- DASY software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand, right-hand and Body Worn usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing to validating the proper functioning of the system.



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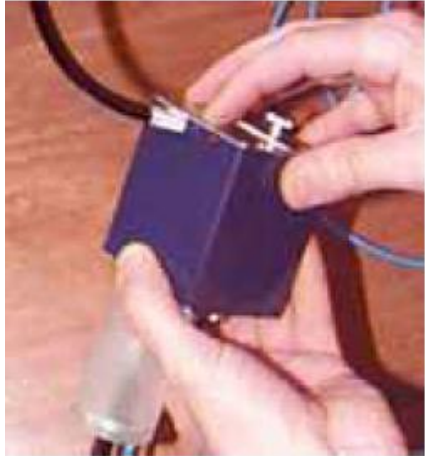
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2.2 Isotropic E-field Probe EX3DV4

	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Calibration	ISO/IEC 17025 calibration service available.
Frequency	10 MHz to > 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 μW/g to > 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 μW/g)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields); the only probe that enables compliance testing for frequencies up to 6 GHz with precision of better 30%.
Compatibility	DASY52 SAR and higher, EASY4/MRI

2.3 Data Acquisition Electronics (DAE)

Model	DAE	
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY4/5 embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.	
Measurement Range	-100 to +300 mV (16 bit resolution and two range settings: 4mV,400mV)	
Input Offset Voltage	< 5μV (with auto zero)	
Input Bias Current	< 50 f A	
Dimensions	60 x 60 x 68 mm	

2.4 SAM Twin Phantom

Material	Vinylester, glass fiber reinforced (VE-GF)	
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)	
Shell Thickness	2 ± 0.2 mm (6 ± 0.2 mm at ear point)	
Dimensions (incl. Wooden Support)	Length: 1000 mm Width: 500 mm Height: adjustable feet	
Filling Volume	pprox.. 25 liters	
Wooden Support	SPEAG standard phantom table	

The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.

Twin SAM V5.0 has the same shell geometry and is manufactured from the same material as Twin SAM V4.0, but has reinforced top structure.

2.5 ELI Phantom

Material	Vinylester, glass fiber reinforced (VE-GF)	
Liquid Compatibility	Compatible with all SPEAG tissue simulating liquids (incl. DGBE type)	
Shell Thickness	2.0 ± 0.2 mm(bottom plate)	
Dimensions	Major axis: 600 mm Minor axis: 400 mm	
Filling Volume	pprox.. 30 liters	
Wooden Support	SPEAG standard phantom table	

Phantom for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI is fully compatible with the IEC 62209-2 standard and all known tissue simulating liquids. ELI has been optimized regarding its performance and can be integrated into our standard phantom tables. A cover prevents evaporation of the liquid. Reference markings on the phantom allow installation of the complete setup, including all predefined phantom positions and measurement grids, by teaching three points. The phantom is compatible with all SPEAG dosimetric probes and dipoles.

ELI V5.0 has the same shell geometry and is manufactured from the same material as ELI4 but has reinforced top structure.

2.6 Device Holder for Transmitters



F-2. Device Holder for Transmitters

- The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation centres for both scales are the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.
- The DASY device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon=3$ and loss tangent $\delta=0.02$. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

2.7 Measurement Procedure

2.7.1 Scanning procedure

Step 1: Power reference measurement

The “reference” and “drift” measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure.

Step 2: Area scan

The SAR distribution at the exposed side of the head was measured at a distance of 4mm from the inner surface of the shell. The area covered the entire dimension of the head and the horizontal grid spacing was 15mm*15mm or 12mm*12mm or 10mm*10mm. Based on the area scan data, the area of the maximum absorption was determined by spline interpolation.

Step 3: Zoom scan

Around this point, a volume of 32mm*32mm*30mm ($f \leq 2\text{GHz}$), 30mm*30mm*30mm (f for 2-3GHz) and 24mm*24mm*22mm (f for 5-6GHz) was assessed by measuring 5x5x7 points ($f \leq 2\text{GHz}$), 7x7x7 points (f for 2-3GHz) and 7x7x12 points (f for 5-6GHz). On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

The data at the surface was extrapolated, since the centre of the dipoles is 2.0mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.2mm. (This can be variable. Refer to the probe specification). The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip. The maximum interpolated value was searched with a straight-forward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1g or 10g) were computed using the 3D-Spline interpolation algorithm. The volume was integrated with the trapezoidal algorithm. One thousand points were interpolated to calculate the average. All neighbouring volumes were evaluated until no neighboring volume with a higher average value was found.

The area and zoom scan resolutions specified in the table below must be applied to the SAR measurements. Probe boundary effect error compensation is required for measurements with the probe tip closer than half a probe tip diameter to the phantom surface. Both the probe tip diameter and sensor offset distance must satisfy measurement protocols; to ensure probe boundary effect errors are minimized and the higher fields closest to the phantom surface can be correctly measured and extrapolated to the phantom surface for computing 1-g SAR. Tolerances of the post-processing algorithms must be verified by the test laboratory for the scan resolutions used in the SAR measurements, according to the reference distribution functions specified in IEEE Std. 1528-2013.



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		$\leq 3 \text{ GHz}$	$> 3 \text{ GHz}$
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface		$5 \pm 1 \text{ mm}$	$\frac{1}{4} \cdot \delta \cdot \ln(2) \pm 0.5 \text{ mm}$
Maximum probe angle from probe axis to phantom surface normal at the measurement location		$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: Δx_{Area} , Δy_{Area}	$\leq 2 \text{ GHz: } \leq 15 \text{ mm}$ $2 - 3 \text{ GHz: } \leq 12 \text{ mm}$		$3 - 4 \text{ GHz: } \leq 12 \text{ mm}$ $4 - 6 \text{ GHz: } \leq 10 \text{ mm}$
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.		
Maximum zoom scan spatial resolution: Δx_{Zoom} , Δy_{Zoom}		$\leq 2 \text{ GHz: } \leq 8 \text{ mm}$ $2 - 3 \text{ GHz: } \leq 5 \text{ mm}^*$	$3 - 4 \text{ GHz: } \leq 5 \text{ mm}^*$ $4 - 6 \text{ GHz: } \leq 4 \text{ mm}^*$
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		$3 - 4 \text{ GHz: } \leq 4 \text{ mm}$ $4 - 5 \text{ GHz: } \leq 3 \text{ mm}$ $5 - 6 \text{ GHz: } \leq 2 \text{ mm}$
	graded grid	$\Delta z_{Zoom}(1)$: between 1 st two points closest to phantom surface	$3 - 4 \text{ GHz: } \leq 3 \text{ mm}$ $4 - 5 \text{ GHz: } \leq 2.5 \text{ mm}$ $5 - 6 \text{ GHz: } \leq 2 \text{ mm}$
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$
Minimum zoom scan volume	x, y, z	$\geq 30 \text{ mm}$	$3 - 4 \text{ GHz: } \geq 28 \text{ mm}$ $4 - 5 \text{ GHz: } \geq 25 \text{ mm}$ $5 - 6 \text{ GHz: } \geq 22 \text{ mm}$

Step 4: Power reference measurement (drift)

The Power Drift Measurement job measures the field at the same location as the most recent power reference measurement job within the same procedure, and with the same settings. The indicated drift is mainly the variation of the DUT's output power and should vary max. $\pm 5 \%$

2.7.2 Data storage

The DASY software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension "DAE". The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated. The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [m W/g], [m W/cm²], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

2.7.3 Data Evaluation by SEMCAD

The SEMCAD software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

Probe parameters:	- Sensitivity	Normi, ai0, ai1, ai2
- Conversion factor	ConvFi	
- Diode compression point	Dcpi	
Device parameters:	- Frequency	f
- Crest factor	cf	
Media parameters:	- Conductivity	ε
- Density	ρ	

These parameters must be set correctly in the software. They can be found in the component documents, or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics.

If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot cf / dcpi$$

With V_i = compensated signal of channel I (I = x, y, z)

U_i = input signal of channel I (I = x, y, z)

cf = crest factor of exciting field (DASY parameter)

dcpi = diode compression point (DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated:

E-field probes:

$$E_i = (V_i / Normi \cdot ConvF)^{1/2}$$



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H-field probes:

$$H_i = (V_i)^{1/2} \cdot (a_{i0} + a_{i1}f + a_{i2}f^2) / f$$

With V_i = compensated signal of channel I ($I = x, y, z$)

Normi = sensor sensitivity of channel I ($I = x, y, z$)

[mV/(V/m)²] for E-field Probes

ConvF = sensitivity enhancement in solution

a_{ij} = sensor sensitivity factors for H-field probes

f = carrier frequency [GHz]

E_i = electric field strength of channel I in V/m

H_i = magnetic field strength of channel I in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$E_{tot} = (E_x^2 + E_y^2 + E_z^2)^{1/2}$$

The primary field data are used to calculate the derived field units.

$$SAR = (E_{tot}^2 \cdot \sigma) / (\epsilon \cdot 1000)$$

with SAR = local specific absorption rate in mW/g

E_{tot} = total field strength in V/m

σ = conductivity in [mho/m] or [Siemens/m]

ϵ = equivalent tissue density in g/cm³

Note that the density is normally set to 1 (or 1.06), to account for actual brain density rather than the density of the simulation liquid. The power flow density is calculated assuming the excitation field to be a free space field.

$$P_{pwe} = E_{tot}^2 / 3770 \text{ or } P_{pwe} = H_{tot}^2 \cdot 37.7$$

with P_{pwe} = equivalent power density of a plane wave in mW/cm²

E_{tot} = total electric field strength in V/m

H_{tot} = total magnetic field strength in A/m



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4 SAR measurement variability and uncertainty

4.1 SAR measurement variability

Per KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04, SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. The additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.

2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.

3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg ($\sim 10\%$ from the 1-g SAR limit).

4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .

The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.



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4.2 SAR measurement uncertainty

Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. The equivalent ratio (1.5/1.6) is applied to extremity and occupational exposure conditions.

Measurement uncertainty evaluation									
A	b1	c	d	e=f(d,k)	f	g	i=C*g/e	i=C*g/e	k
Uncertainty Component	Section in P1528	Tol (%)	Prob. Dist	Div.	C _i (1g)	C _i (10g)	1-g ui(%)	10-g ui(%)	V _i (Veff)
Measurement System									
Probe Calibration (k=1)	E.2.1	6.3	N	1	1	1	6.30	6.30	∞
Axial Isotropy	E.2.2	0.5	R	√3	0.7	0.7	0.20	0.20	∞
Hemispherical Isotropy	E.2.2	2.6	R	√3	0.7	0.7	1.06	1.06	∞
Boundary Effect	E.2.3	1.0	R	√3	1	1	0.58	0.58	∞
Linearity	E.2.4	0.6	R	√3	1	1	0.35	0.35	∞
System Detection LimitS	E.2.4	0.25	R	√3	1	1	0.14	0.14	∞
Modulation Response	E.2.5	2.4	R	√3	1	1	1.39	1.39	∞
Readout Electronics	E.2.6	0.3	N	1	1	1	0.30	0.30	∞
Response Time	E.2.7	0.0	R	√3	1	1	0.00	0.00	∞
Integration Time	E.2.8	2.6	R	√3	1	1	1.50	1.50	∞
RF Ambient Condition-Noise	E.6.1	3.0	R	√3	1	1	1.73	1.73	∞
RF Ambient Condition-Reflections	E.6.1	3.0	R	√3	1	1	1.73	1.73	∞
Probe Positioning-Mechanical Tolerance	E.6.2	1.5	R	√3	1	1	0.87	0.87	∞
Probe Positioning-with Respect to Phantom	E.6.3	2.9	R	√3	1	1	1.67	1.67	∞
Max. SAR Evaluation	E.5	1.0	R	√3	1	1	0.58	0.58	∞
Test sample Related									
Test sample Positioning	E.4.2	3.7	N	1	1	1	3.70	3.70	9
Device Holder Uncertainty	E.4.1	3.6	N	1	1	1	3.60	3.60	∞
Output Power Variation-SAR Drift Measurement	E.2.9	5	R	√3	1	1	2.89	2.89	∞
Output Power Variation-SAR Drift Measurement	E.6.5	0	R	√3	1	1	0.00	0.00	∞
Phantom and Tissue Parameters									
Phantom Uncertainty(Shape and Thickness Tolerances)	E.3.1	4	R	√3	1	1	2.31	2.31	∞
SAR Correction	E.3.2	1.9	N	1	1	0.84	1.90	1.60	∞
Liquid Conductivity (Measurement Uncertainty)	E.3.3	3.75	N	1	0.78	0.71	2.93	2.663	5
Liquid Permittivity (Measurement Uncertainty)	E.3.3	1.62	N	1	0.23	0.26	0.37	0.421	5
Liquid Conductivity (Temperature Uncertainty)	E.3.4	4.2	R	√3	0.78	0.71	1.89	1.72	∞
Liquid Permittivity ((Temperature Uncertainty)	E.3.4	3.7	R	√3	0.23	0.26	0.49	0.56	∞
Combined Standard Uncertainty				RSS			10.58	10.43	430
Expanded Uncertainty (95% Confidence Interval)				k=2			21.16%	20.87%	



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5 Description of Test Position

5.1 The Head Test Position

SAR can test the sides near the antenna, the surface of the device should be tested for SAR compliance with device touching the phantom. The SAR Exclusion Threshold in KDB 447498 D04 for FCC can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent device surface is used to determine if SAR testing is required for the adjacent surfaces, with the adjacent surface positioned against the phantom and the surface containing the antenna positioned perpendicular to the phantom.

Because this product is a hand-held Sports Camera, it supports the body to wear and use, and the display screen will face the face during use. So Extremity SAR is evaluated with 0mm and Head & Body SAR is evaluated with 10mm.



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6 SAR System Verificaion Procedure

6.1 Tissue Simulate Liquid

6.1.1 Recipes for Tissue Simulate Liquid

The bellowing tables give the recipes for tissue simulating liquids to be used in different frequency bands:

Ingredients (% by weight)	Frequency (MHz)				
	450	700-1000	1700-2000	2300-2500	2500-2700
Water	38.56	40.30	55.24	55.00	54.92
Salt (NaCl)	3.95	1.38	0.31	0.2	0.23
Sucrose	56.32	57.90	0	0	0
HEC	0.98	0.24	0	0	0
Bactericide	0.19	0.18	0	0	0
Tween	0	0	44.45	44.80	44.85
Salt: 99+% Pure Sodium Chloride Water: De-ionized, 16 MΩ+ resistivity Tween: Polyoxyethylene (20) sorbitan monolaurate Sucrose: 98+% Pure Sucrose HEC: Hydroxyethyl Cellulose					
HSL5GHz is composed of the following ingredients: (Manufactured by SPEAG) Water: 50-65% Mineral oil: 10-30% Emulsifiers: 8-25% Sodium salt: 0-1.5%					

Table 1 : Recipe of Tissue Simulate Liquid

6.1.2 Measurement for Tissue Simulate Liquid

The Conductivity (σ) and Permittivity (ϵ_r) are listed in Table 2. For the SAR measurement given in this report. The temperature variation of the Tissue Simulate Liquids was $22 \pm 2^\circ\text{C}$.

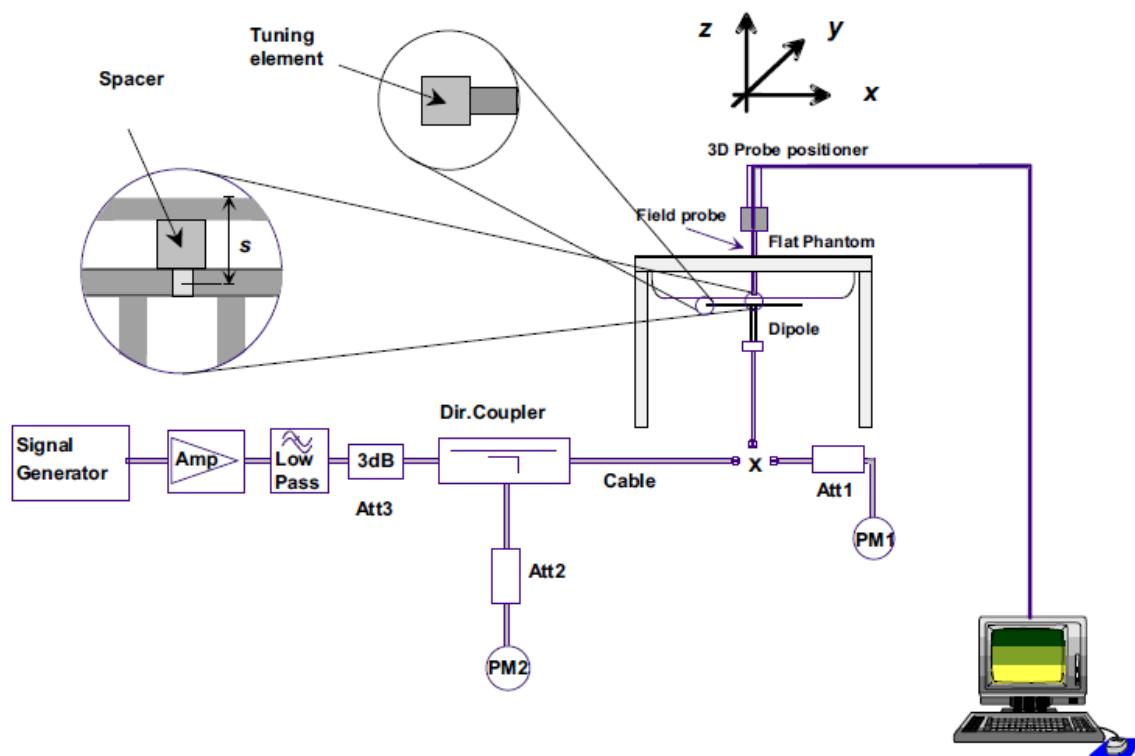
Measurement for Tissue Simulate Liquid									
Tissue Type	Measured Frequency (MHz)	Measured Tissue		Target Tissue ($\pm 5\%$)		Deviation (Within $\pm 5\%$)		Liquid Temp. ($^\circ\text{C}$)	Test Date
		ϵ_r	$\sigma(\text{S/m})$	ϵ_r	$\sigma(\text{S/m})$	ϵ_r	$\sigma(\text{S/m})$		
2402 Head	2402	39.286	1.753	39.30	1.76	-0.04%	-0.40%	22.3	2024/10/27
2412 Head	2412	39.275	1.761	39.28	1.77	-0.01%	-0.51%	22.1	2024/10/21
2437 Head	2437	39.228	1.779	39.23	1.79	-0.01%	-0.61%	22.1	2024/10/21
2441 Head	2441	39.218	1.788	39.22	1.79	-0.01%	-0.11%	22.3	2024/10/21
2450 Head	2450	38.397	1.785	39.20	1.80	-2.05%	-0.86%	22.1	2024/10/21
2450 Head	2450	38.397	1.785	39.20	1.80	-2.05%	-0.86%	22.3	2024/10/27
2462 Head	2462	38.389	1.760	39.18	1.81	-2.02%	-2.76%	22.1	2024/10/21
2480 Head	2480	38.298	1.798	39.14	1.83	-2.15%	-1.75%	22.3	2024/10/27
5180 Head	5180	36.359	4.268	36.40	4.30	-0.11%	-0.74%	21.9	2024/10/23
5200 Head	5200	35.974	4.574	35.96	4.66	0.04%	-1.85%	21.9	2024/10/23
5210 Head	5210	35.895	4.587	35.95	4.61	-0.15%	-0.50%	21.9	2024/10/23
5240 Head	5240	35.887	4.596	35.91	4.65	-0.06%	-1.16%	21.9	2024/10/23
5250 Head	5250	36.710	4.670	35.90	4.66	2.26%	0.21%	21.9	2024/10/23
5745 Head	5745	36.115	5.159	35.40	5.22	2.02%	-1.17%	22.4	2024/10/25
5750 Head	5750	35.934	5.223	35.40	5.22	1.51%	0.06%	22.4	2024/10/25
5785 Head	5785	35.349	5.230	35.38	5.26	-0.09%	-0.57%	22.4	2024/10/25
5775 Head	5775	35.341	5.235	35.38	5.25	-0.11%	-0.29%	22.4	2024/10/25
5825 Head	5825	35.336	5.278	35.35	5.30	-0.04%	-0.42%	22.4	2024/10/25

Table 2 : Measurement result of Tissue electric parameters



6.2 SAR System Check

The microwave circuit arrangement for system Check is sketched in F-12. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within $\pm 10\%$ from the target SAR values. The tests were conducted on the same days as the measurement of the EUT. The obtained results from the system accuracy verification are displayed in the following table (A power level of 250mW (below 3GHz) or 100mW (3-6GHz) was input to the dipole antenna). During the tests, the ambient temperature of the laboratory was in the range $22\pm 2^\circ\text{C}$, the relative humidity was in the range 60% and the liquid depth above the ear reference points was above 15 ± 0.5 cm in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.



F-12. The microwave circuit arrangement used for SAR system Check

6.2.1 Justification for Extended SAR Dipole Calibrations

1) Instead of the typical annual calibration recommended by measurement standards, longer calibration intervals of up to three years may be considered when it is demonstrated that the SAR target, impedance and return loss of a dipole have remain stable according to the following requirements. Each measured dipole is expected to evaluate with the following criteria at least on annual interval in Appendix C.

- a) There is no physical damage on the dipole;
- b) System check with specific dipole is within 10% of calibrated value;
- c) Return-loss is within 20% of calibrated measurement;
- d) Impedance is within 5Ω from the previous measurement.

2) Network analyzer probe calibration against air, distilled water and a shorting block performed before measuring liquid parameters.



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6.2.2 Summary System Check Result(s)

SAR System Validation Result(s)											
Validation Kit		Measured SAR 250mW	Measured SAR 250mW	Measured SAR (normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W)	Target SAR (normalized to 1W)	Deviation (Within ±10%)		Liquid Temp. (°C)	Test Date
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)	1- g(W/kg)	10- g(W/kg)		
D2450V2	Head	13.20	6.16	52.80	24.64	52.20	24.30	1.15%	1.40%	22.1	2024/10/21
D2450V2	Head	12.90	6.04	51.60	24.16	52.20	24.30	-1.15%	-0.58%	22.3	2024/10/27
Validation Kit		Measured SAR 100mW	Measured SAR 100mW	Measured SAR (normalized to 1W)	Measured SAR (normalized to 1W)	Target SAR (normalized to 1W)	Target SAR (normalized to 1W)	Deviation (Within ±10%)		Liquid Temp. (°C)	Test Date
		1g (W/kg)	10g (W/kg)	1g (W/kg)	10g (W/kg)	1-g(W/kg)	10-g(W/kg)	1- g(W/kg)	10- g(W/kg)		
D5GHzV2	Head(5.25GHz)	8.01	2.30	80.10	23.00	77.30	22.10	3.62%	4.07%	21.9	2024/10/23
	Head(5.75GHz)	7.17	2.06	71.70	20.60	77.10	21.30	-7.00%	-3.29%	22.4	2024/10/25

Table 3 : SAR System Check Result

6.2.3 Detailed System Check Results

Please see the Appendix A

7 Test Configuration

7.1 Operation Configurations

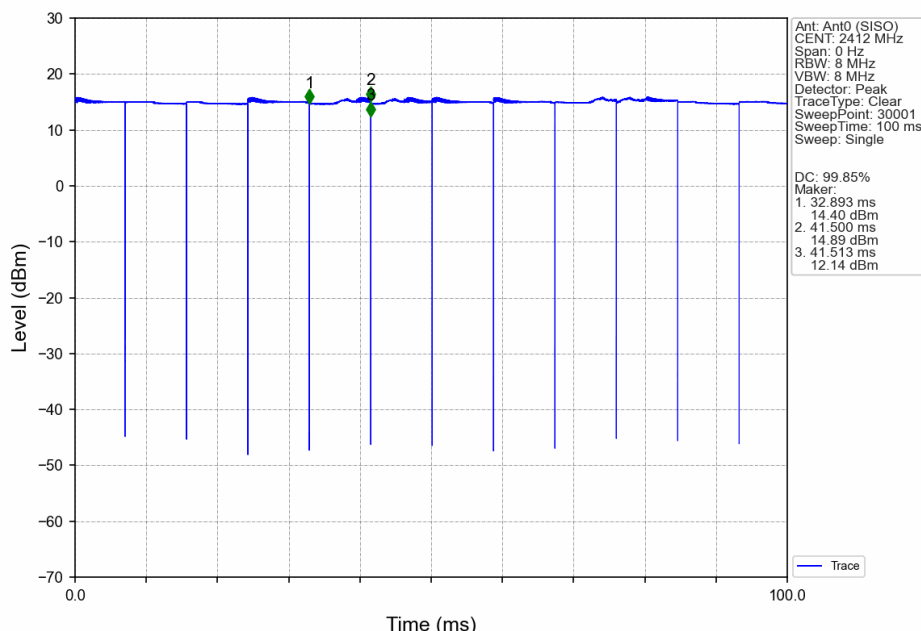
7.1.1 WiFi Test Configuration

For the 802.11b/g/n SAR tests, a communication link is set up with the test mode software for Wi-Fi mode test. The Absolute Radio Frequency Channel Number (ARFCN) is allocated to 1, 6 and 11 respectively in the case of 2450 MHz during the test at the each test frequency channel, the EUT is operated at the RF continuous emission mode. Each channel should be tested at the lowest rate. 802.11b/g/n operating modes are tested independently according to the service requirements in each frequency band. 802.11b/g/n modes are tested on channel 1, 6, 11; However if output power reduction is necessary for channels 1 and/or 11 to meet restricted band requirements the highest output power channel closest to each of these channels must be tested instead.

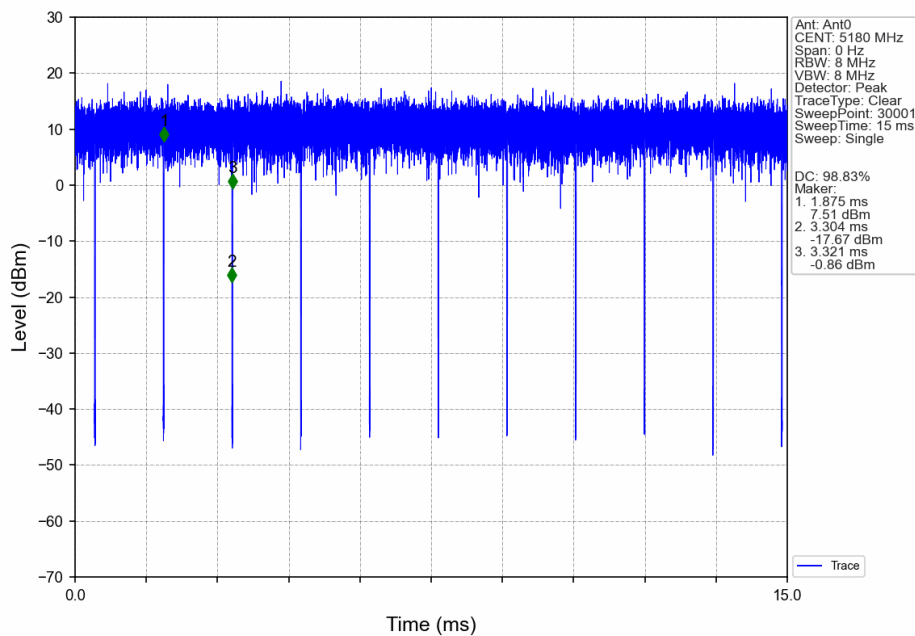
SAR is not required for 802.11g/n channels when the maximum average output power is less than 0.25dB higher than that measured on the corresponding 802.11b channels.

Duty cycle

WIFI 2.4GHz duty cycle: 99.85%



WLAN 5G duty cycle: 93.8%



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7.1.1.1 Initial Test Position SAR Test Reduction Procedure

DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures. The initial test position procedure is described in the following:

- 1) .When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other (remaining) test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band. SAR is also not required for that exposure configuration in the subsequent test configuration(s).
- 2) .When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest extrapolated or estimated 1-g SAR conditions determined by area scans or next closest/smallest test separation distance and maximum RF coupling test positions based on manufacturer justification, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg or all required test positions (left, right, touch, tilt or subsequent surfaces and edges) are tested.
- 3) .For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested. a) Additional power measurements may be required for this step, which should be limited to those necessary for identifying the subsequent highest output power channels.

7.1.1.2 Initial Test Configuration Procedures

An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. SAR is measured using the highest measured maximum output power channel. For configurations with the same specified or measured maximum output power, additional transmission mode and test channel selection procedures are required. SAR test reduction for subsequent highest output test channels is determined according to *reported* SAR of the initial test configuration.

For next to the ear, hotspot mode and UMC mini-tablet exposure configurations where multiple test positions are required, the initial test position procedure is applied to minimize the number of test positions required for SAR measurement using the initial test configuration transmission mode. For fixed exposure conditions that do not have multiple SAR test positions, SAR is measured in the transmission mode determined by the initial test configuration.

When the *reported* SAR of the initial test configuration is > 0.8 W/kg, SAR measurement is required for subsequent next highest measured output power channel(s) in the initial test configuration until *reported* SAR is ≤ 1.2 W/kg or all required channels are tested.

7.1.1.3 Subsequent Test Configuration Procedures

SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units. The initial test position procedure is applied to next to the ear, UMPC mini-tablet and hotspot mode configurations.



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When the same maximum output power is specified for multiple transmission modes, additional power measurements may be required to determine if SAR measurements are required for subsequent highest output power channels in a subsequent test configuration. The subsequent test configuration and SAR measurement procedures are described in the following.

- 1) . When SAR test exclusion provisions of KDB Publication 447498 are applicable and SAR measurement is not required for the initial test configuration, SAR is also not required for the next highest maximum output power transmission mode subsequent test configuration(s) in that frequency band or aggregated band and exposure configuration.
- 2) . When the highest *reported* SAR for the initial test configuration (when applicable, include subsequent highest output channels), according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for that subsequent test configuration.
- 3) . The number of channels in the initial test configuration and subsequent test configuration can be different due to differences in channel bandwidth. When SAR measurement is required for a subsequent test configuration and the channel bandwidth is smaller than that in the initial test configuration, all channels in the subsequent test configuration that overlap with the larger bandwidth channel tested in the initial test configuration should be used to determine the highest maximum output power channel. This step requires additional power measurement to identify the highest maximum output power channel in the subsequent test configuration to determine SAR test reduction.
 - a) SAR should first be measured for the channel with highest measured output power in the subsequent test configuration.
 - b) SAR for subsequent highest measured maximum output power channels in the subsequent test configuration is required only when the *reported* SAR of the preceding higher maximum output power channel(s) in the subsequent test configuration is > 1.2 W/kg or until all required channels are tested. i) For channels with the same measured maximum output power, SAR should be measured using the channel closest to the center frequency of the larger channel bandwidth channel in the initial test configuration.
- 4) . SAR measurements for the remaining highest specified maximum output power OFDM transmission mode configurations that have not been tested in the initial test configuration (highest maximum output) or subsequent test configuration(s) (subsequent next highest maximum output power) is determined by recursively applying the subsequent test configuration procedures in this section to the remaining configurations according to the following:
 - a) replace "subsequent test configuration" with "next subsequent test configuration" (i.e., subsequent next highest specified maximum output power configuration)
 - b) replace "initial test configuration" with "all tested higher output power configurations"

7.1.1.4 2.4 GHz Wi-Fi SAR Procedures

Separate SAR procedures are applied to DSSS and OFDM configurations in the 2.4 GHz band to simplify DSSS test requirements. For 802.11b DSSS SAR measurements, DSSS SAR procedure applies to fixed exposure test position and initial test position procedure applies to multiple exposure test positions. When SAR measurement is required for an OFDM configuration, the initial test configuration, subsequent test configuration and initial test position procedures are applied. The SAR test exclusion requirements for 802.11g/n OFDM configurations are described in following.

• 802.11b DSSS SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either a fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

- 1) . When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure



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configuration.

- 2) . When the reported SAR is $> 0.8 \text{ W/kg}$, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is $> 1.2 \text{ W/kg}$, SAR is required for the third channel; i.e., all channels require testing.

- **2.4 GHz 802.11g/n OFDM SAR Test Exclusion Requirements**

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied (section 5.3, including sub-sections). SAR is not required for the following 2.4 GHz OFDM conditions.

- 1) . When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.
- 2) . When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is $\leq 1.2 \text{ W/kg}$.

7.1.1.5 5 GHz Wi-Fi SAR Procedures

- **U-NII-1 and U-NII-2A Bands**

For devices that operate in only one of the U-NII-1 and U-NII-2A bands, the normally required SAR procedures for OFDM configurations are applied. For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following:

- 1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is $\leq 1.2 \text{ W/kg}$, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, both bands are tested independently for SAR.
- 2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is $\leq 1.2 \text{ W/kg}$, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, both bands are tested independently for SAR.
- 3) The two U-NII bands may be aggregated to support a 160 MHz channel on channel number 50. Without additional testing, the maximum output power for this is limited to the lower of the maximum output power certified for the two bands. When SAR measurement is required for at least one of the bands and the highest reported SAR adjusted by the ratio of specified maximum output power of aggregated to standalone band is $> 1.2 \text{ W/kg}$, SAR is required for the 160 MHz channel. This procedure does not apply to an aggregated band with maximum output higher than the standalone band(s); the aggregated band must be tested independently for SAR. SAR is not required when the 160 MHz channel is operating at a reduced maximum power and also qualifies for SAR test exclusion.

- **U-NII-2C and U-NII-3 Bands**

The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. when Terminal Doppler Weather Radar (TDWR) restriction applies, all channels that operate at 5.60 – 5.65 GHz must be included to apply the SAR test reduction and measurement procedures.

When the same transmitter and antenna(s) are used for U-NII-2C band and U-NII-3 band or 5.8 GHz band of §15.247, the bands may be aggregated to enable additional channels with 20, 40 or 80 MHz bandwidth to span across the band gap, as illustrated in Appendix B. The maximum output power for the additional band gap channels is limited to the lower of those certified for the bands. Unless band gap channels are permanently



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disabled, they must be considered for SAR testing. The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. To maintain SAR measurement accuracy and to facilitate test reduction, the channels in U-NII-2C band above 5.65 GHz may be grouped with the 5.8 GHz channels in U-NII-3 or §15.247 band to enable two SAR probe calibration frequency points to cover the bands, including the band gap channels. When band gap channels are supported and the bands are not aggregated for SAR testing, band gap channels must be considered independently in each band according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

• OFDM Transmission Mode SAR Test Configuration and Channel Selection Requirements

The initial test configuration for 5 GHz OFDM transmission modes is determined by the 802.11 configuration with the highest maximum output power specified for production units, including tune-up tolerance, in each standalone and aggregated frequency band. SAR for the initial test configuration is measured using the highest maximum output power channel determined by the default power measurement procedures. When multiple configurations in a frequency band have the same specified maximum output power, the initial test configuration is determined according to the following steps applied sequentially.

- 1) The largest channel bandwidth configuration is selected among the multiple configurations with the same specified maximum output power.
- 2) If multiple configurations have the same specified maximum output power and largest channel bandwidth, the lowest order modulation among the largest channel bandwidth configurations is selected.
- 3) If multiple configurations have the same specified maximum output power, largest channel bandwidth and lowest order modulation, the lowest data rate configuration among these configurations is selected.
- 4) When multiple transmission modes (802.11a/g/n/ac) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected; i.e., 802.11a is chosen over 802.11n then 802.11ac or 802.11g is chosen over 802.11n. After an initial test configuration is determined, if multiple test channels have the same measured maximum output power, the channel chosen for SAR measurement is determined according to the following. These channel selection procedures apply to both the initial test configuration and subsequent test configuration(s), with respect to the default power measurement procedures or additional power measurements required for further SAR test reduction. The same procedures also apply to subsequent highest output power channel(s) selection.
 - a) The channel closest to mid-band frequency is selected for SAR measurement.
 - b) For channels with equal separation from mid-band frequency; for example, high and low channels or two mid-band channels, the higher frequency (number) channel is selected for SAR measurement.

• SAR Test Requirements for OFDM configurations

When SAR measurement is required for 802.11 a/n/ac OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. When the same transmitter and antenna(s) are used for U-NII-1 and U-NII-2A bands, additional SAR test reduction applies. When band gap channels between U-NII-2C band and 5.8 GHz U-NII-3 or §15.247 band are supported, the highest maximum output power transmission mode configuration and maximum output power channel across the bands must be used to determine SAR test reduction, according to the initial test configuration and subsequent test configuration requirements. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.



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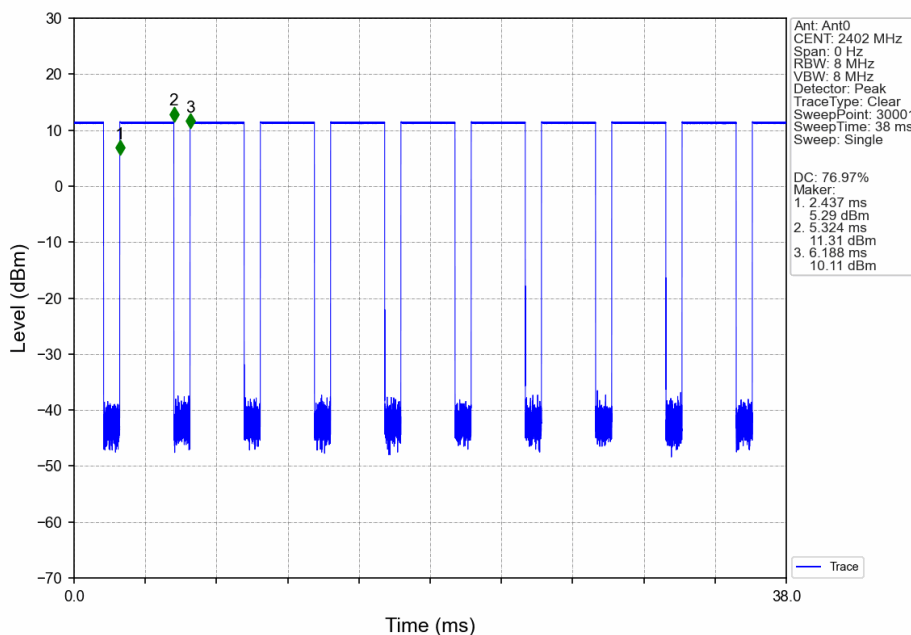
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7.1.2 Bluetooth Test Configuration

For the Bluetooth SAR tests, a communication link is set up with the test mode software for BT mode test. Bluetooth USES frequency hopping technology to divide the transmitted data into packets and transmit the packets respectively through 79 designated Bluetooth channels, 1MHz Bandwidth, frequency hops at 1600 hops/second per the Bluetooth standard. The Radio Frequency Channel Number (RFCN) is allocated to 0, 39 and 78 respectively in the case of 2402~2480 MHz during the test at each test frequency channel, the EUT is operated at the RF continuous emission mode.

7.1.2.1 Duty cycle

Bluetooth duty cycle: 76.97%



8 Test Result

8.1 Measurement of RF Conducted Power

WIFI 2.4G Ant0					
Mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11b	1	2412	1	17.83	19.00
	6	2437		18.56	19.00
	11	2462		18.07	19.00
802.11g	1	2412	6	17.06	18.00
	6	2437		17.73	18.00
	11	2462		17.16	18.00
802.11n HT20	1	2412	6.5	16.31	17.50
	6	2437		16.99	17.50
	11	2462		16.41	17.50
802.11ax HE20	1	2412	MCS0	16.98	17.50
	6	2437		16.58	17.50
	11	2462		16.41	17.50

WIFI 2.4G Ant1					
Mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11b	1	2412	1	17.81	19.00
	6	2437		18.54	19.00
	11	2462		17.99	19.00
802.11g	1	2412	6	17.08	18.00
	6	2437		17.78	18.00
	11	2462		17.17	18.00
802.11n HT20	1	2412	6.5	16.31	17.50
	6	2437		16.98	17.50
	11	2462		16.40	17.50
802.11ax HE20	1	2412	MCS0	17.00	17.50
	6	2437		16.58	17.50
	11	2462		16.42	17.50

WIFI 2.4G MIMO							
Mode	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Average Power (dBm)	Average Power (dBm)	Tune up
802.11b	1	2412	1	\	\	\	\
	6	2437		\	\	\	\
	11	2462		\	\	\	\
802.11g	1	2412	6	\	\	\	\



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	6	2437		\	\	\	\
	11	2462		\	\	\	\
802.11n HT20	1	2412	6.5	16.31	16.31	19.32	20.50
	6	2437		16.99	16.98	20.00	20.50
	11	2462		16.41	16.40	19.42	20.50
802.11ax HE20	1	2412	MCS0	16.98	17.00	20.00	20.50
	6	2437		16.58	16.58	19.59	20.50
	11	2462		16.41	16.42	19.43	20.50

WIFI 5G Ant0						
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11a	U-NII-1	36	5180	6	15.79	17.00
		40	5200		15.53	17.00
		48	5240		15.77	17.00
	U-NII-3	149	5745		16.51	17.00
		157	5785		15.15	17.00
		165	5825		15.86	17.00
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11n-HT20	U-NII-1	36	5180	MCS0	15.08	16.50
		40	5200		15.11	16.50
		48	5240		15.13	16.50
	U-NII-3	149	5745		16.30	16.50
		157	5785		15.12	16.50
		165	5825		15.17	16.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11n-HT40	U-NII-1	38	5190	MCS0	15.77	16.50
		46	5230		15.89	16.50
	U-NII-3	151	5755		15.79	16.50
		159	5795		15.29	16.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11ac VHT20	U-NII-1	36	5180	MCS0	15.44	16.50
		40	5200		15.67	16.50
		48	5240		15.16	16.50
	U-NII-3	149	5745		16.11	16.50
		157	5785		14.98	16.50
		165	5825		15.62	16.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11ac VHT40	U-NII-1	38	5190	MCS0	16.21	16.50
		46	5230		15.76	16.50



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	U-NII-3	151	5755		16.07	16.50
		159	5795		15.21	16.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11ac VHT80	U-NII-1	42	5210	MCS0	15.63	16.50
	U-NII-3	155	5775		14.79	16.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11ax HEW20	U-NII-1	36	5180	MCS0	15.05	16.50
		40	5200		14.87	16.50
		48	5240		15.14	16.50
	U-NII-3	149	5745		16.31	16.50
		157	5785		15.14	16.50
		165	5825		14.85	16.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11ax HEW40	U-NII-1	38	5190	MCS0	15.72	16.50
		46	5230		15.98	16.50
	U-NII-3	151	5755		15.25	16.50
		159	5795		15.45	16.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11ax HEW80	U-NII-1	42	5210	MCS0	15.84	16.50
	U-NII-3	155	5775		16.13	16.50

WIFI 5G Ant1						
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11a	U-NII-1	36	5180	6	16.19	17.00
		40	5200		15.99	17.00
		48	5240		15.83	17.00
	U-NII-3	149	5745		16.17	17.00
		157	5785		16.07	17.00
		165	5825		16.07	17.00
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11n-HT20	U-NII-1	36	5180	MCS0	15.46	16.50
		40	5200		15.19	16.50
		48	5240		15.00	16.50
	U-NII-3	149	5745		16.09	16.50
		157	5785		16.11	16.50
		165	5825		15.19	16.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11n-HT40	U-NII-1	38	5190	MCS0	16.12	16.50



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		46	5230		15.91	16.50
	U-NII-3	151	5755		15.85	16.50
		159	5795		16.33	16.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11ac VHT20	U-NII-1	36	5180	MCS0	15.79	16.50
		40	5200		16.14	16.50
		48	5240		15.02	16.50
	U-NII-3	149	5745		16.06	16.50
		157	5785		15.67	16.50
		165	5825		15.83	16.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11ac VHT40	U-NII-1	38	5190	MCS0	16.14	16.50
		46	5230		15.90	16.50
	U-NII-3	151	5755		16.22	16.50
		159	5795		16.03	16.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11ac VHT80	U-NII-1	42	5210	MCS0	15.70	16.50
	U-NII-3	155	5775		15.61	16.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11ax HEW20	U-NII-1	36	5180	MCS0	15.32	16.50
		40	5200		15.33	16.50
		48	5240		15.06	16.50
	U-NII-3	149	5745		15.95	16.50
		157	5785		16.18	16.50
		165	5825		15.30	16.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11ax HEW40	U-NII-1	38	5190	MCS0	16.03	16.50
		46	5230		15.93	16.50
	U-NII-3	151	5755		15.80	16.50
		159	5795		16.28	16.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Tune up
802.11ax HEW80	U-NII-1	42	5210	MCS0	16.15	16.50
	U-NII-3	155	5775		16.41	16.50

WIFI 5G MIMO								
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Average Power (dBm)	Average Power (dBm)	Tune up
802.11a	U-NII-1	36	5180	6	\	\	\	\



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		40	5200		\	\	\	\
		48	5240		\	\	\	\
	U-NII-3	149	5745		\	\	\	\
		157	5785		\	\	\	\
		165	5825		\	\	\	\
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Average Power (dBm)	Average Power (dBm)	Tune up
802.11n-HT20	U-NII-1	36	5180	MCS0	15.08	15.46	18.28	19.50
		40	5200		15.11	15.19	18.16	19.50
		48	5240		15.13	15.00	18.08	19.50
	U-NII-3	149	5745		16.30	16.09	19.21	19.50
		157	5785		15.12	16.11	18.65	19.50
		165	5825		15.17	15.19	18.19	19.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Average Power (dBm)	Average Power (dBm)	Tune up
802.11n-HT40	U-NII-1	38	5190	MCS0	15.77	16.12	18.96	19.50
		46	5230		15.89	15.91	18.91	19.50
	U-NII-3	151	5755		15.79	15.85	18.83	19.50
		159	5795		15.29	16.33	18.85	19.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Average Power (dBm)	Average Power (dBm)	Tune up
802.11ac VHT20	U-NII-1	36	5180	MCS0	15.44	15.79	18.63	19.50
		40	5200		15.67	16.14	18.92	19.50
		48	5240		15.16	15.02	18.10	19.50
	U-NII-3	149	5745		16.11	16.06	19.10	19.50
		157	5785		14.98	15.67	18.35	19.50
		165	5825		15.62	15.83	18.74	19.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Average Power (dBm)	Average Power (dBm)	Tune up
802.11ac VHT40	U-NII-1	38	5190	MCS0	16.21	16.14	19.19	19.50
		46	5230		15.76	15.90	18.84	19.50
	U-NII-3	151	5755		16.07	16.22	19.16	19.50
		159	5795		15.21	16.03	18.65	19.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Average Power (dBm)	Average Power (dBm)	Tune up
802.11ac VHT80	U-NII-1	42	5210	MCS0	15.63	15.70	18.68	19.50
	U-NII-3	155	5775		14.79	15.61	18.23	19.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Average Power (dBm)	Average Power (dBm)	Tune up
802.11ax HEW20	U-NII-1	36	5180	MCS0	15.05	15.32	18.20	19.50
		40	5200		14.87	15.33	18.12	19.50
		48	5240		15.14	15.06	18.11	19.50
	U-NII-3	149	5745		16.31	15.95	19.14	19.50



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		157	5785		15.14	16.18	18.70	19.50
		165	5825		14.85	15.30	18.09	19.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Average Power (dBm)	Average Power (dBm)	Tune up
802.11ax HEW40	U-NII-1	38	5190	MCS0	15.72	16.03	18.89	19.50
		46	5230		15.98	15.93	18.97	19.50
	U-NII-3	151	5755		15.25	15.80	18.54	19.50
		159	5795		15.45	16.28	18.90	19.50
Mode	5GHz	Channel	Frequency(MHz)	Data Rate(Mbps)	Average Power (dBm)	Average Power (dBm)	Average Power (dBm)	Tune up
802.11ax HEW80	U-NII-1	42	5210	MCS0	15.84	16.15	19.01	19.50
	U-NII-3	155	5775		16.13	16.41	19.28	19.50

BT				
Mode	Channel	Frequency(MHz)	Average Power (dBm)	Tune up
GFSK	0	2402	9.90	11.00
	39	2441	9.47	11.00
	78	2480	9.41	11.00
Pi/4DQPSK	0	2402	6.86	8.00
	39	2441	6.19	8.00
	78	2480	6.11	8.00
8DPSK	0	2402	7.17	8.00
	39	2441	6.35	8.00
	78	2480	6.28	8.00

BLE				
Mode	Channel	Frequency(MHz)	Average Power (dBm)	Tune up
1M	0	2402	9.60	10.50
	19	2440	9.55	10.50
	39	2480	9.08	10.50
2M	0	2402	10.02	10.50
	19	2440	9.89	10.50
	39	2480	9.56	10.50



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8.2 Measurement of SAR Data

Note:

- 1) The maximum Scaled SAR value is marked in bold. Graph Results refer to Appendix B
- 2) Per FCC KDB Publication 447498 D01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg (2.0W/kg for 10g) then testing at the other channels is not required for such test configuration(s).
- 3) The scaled SAR = Measured SAR(W/kg) * Duty Cycle Scaled factor * Scaled factor
- 4) Duty Cycle Scaled factor = 100% / Measured Duty Cycle

WiFi

- 1) When the highest reported SAR for the initial test configuration is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR test for the other 802.11 modes are not required.



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8.2.1 SAR Result of WIFI 2.4G

Wi-Fi 2.4G SAR Test Record ANT0												
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head&Body Test data (Separate 10mm)												
Front side	802.11b	6/2437	99.85%	1.002	0.131	0.072	-0.02	18.56	19.00	1.107	0.145	22.1
Back side	802.11b	6/2437	99.85%	1.002	0.106	0.059	0.08	18.56	19.00	1.107	0.118	22.1
Left side	802.11b	6/2437	99.85%	1.002	0.120	0.071	-0.08	18.56	19.00	1.107	0.133	22.1
Right side	802.11b	6/2437	99.85%	1.002	0.015	0.009	0.09	18.56	19.00	1.107	0.016	22.1
Top side	802.11b	6/2437	99.85%	1.002	0.197	0.094	0.04	18.56	19.00	1.107	0.218	22.1
Bottom side	802.11b	6/2437	99.85%	1.002	0.030	0.017	0.02	18.56	19.00	1.107	0.033	22.1
Top side	802.11b	1/2412	99.85%	1.002	0.120	0.058	0.03	17.83	19.00	1.309	0.157	22.1
Top side	802.11b	11/2462	99.85%	1.002	0.179	0.087	0.08	18.07	19.00	1.239	0.222	22.1
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 10-g (W/kg)	Liquid Temp.(°C)
Extremity Test data (Separate 0mm)												
Front side	802.11b	6/2437	99.85%	1.002	0.447	0.216	-0.01	18.56	19.00	1.107	0.240	22.1
Back side	802.11b	6/2437	99.85%	1.002	0.479	0.236	0.09	18.56	19.00	1.107	0.262	22.1
Left side	802.11b	6/2437	99.85%	1.002	0.573	0.294	0.08	18.56	19.00	1.107	0.326	22.1
Right side	802.11b	6/2437	99.85%	1.002	0.057	0.027	0.02	18.56	19.00	1.107	0.030	22.1
Top side	802.11b	6/2437	99.85%	1.002	1.560	0.555	-0.16	18.56	19.00	1.107	0.615	22.1
Bottom side	802.11b	6/2437	99.85%	1.002	0.123	0.061	0.07	18.56	19.00	1.107	0.068	22.1
Top side	802.11b	1/2412	99.85%	1.002	1.770	0.596	0.02	17.83	19.00	1.309	0.782	22.1
Top side	802.11b	11/2462	99.85%	1.002	1.610	0.577	0.06	18.07	19.00	1.239	0.716	22.1
Wi-Fi 2.4G SAR Test Record ANT1												
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head&Body Test data (Separate 10mm)												
Front side	802.11b	6/2437	99.85%	1.002	0.042	0.024	-0.04	18.54	19.00	1.112	0.047	22.1
Back side	802.11b	6/2437	99.85%	1.002	0.135	0.076	0.01	18.54	19.00	1.112	0.150	22.1
Left side	802.11b	6/2437	99.85%	1.002	0.016	0.009	0.05	18.54	19.00	1.112	0.018	22.1
Right side	802.11b	6/2437	99.85%	1.002	0.115	0.065	0.02	18.54	19.00	1.112	0.128	22.1
Top side	802.11b	6/2437	99.85%	1.002	0.105	0.051	0.06	18.54	19.00	1.112	0.117	22.1
Bottom side	802.11b	6/2437	99.85%	1.002	0.034	0.018	0.01	18.54	19.00	1.112	0.038	22.1
Back side	802.11b	1/2412	99.85%	1.002	0.116	0.066	0.03	17.81	19.00	1.315	0.153	22.1
Back side	802.11b	11/2462	99.85%	1.002	0.103	0.058	-0.06	17.99	19.00	1.262	0.130	22.1
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 10-g (W/kg)	Liquid Temp.(°C)
Extremity Test data (Separate 0mm)												
Front side	802.11b	6/2437	99.85%	1.002	0.117	0.058	-0.09	18.54	19.00	1.112	0.065	22.1
Back side	802.11b	6/2437	99.85%	1.002	0.912	0.436	0.08	18.54	19.00	1.112	0.486	22.1
Left side	802.11b	6/2437	99.85%	1.002	0.058	0.027	0.07	18.54	19.00	1.112	0.030	22.1



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Right side	802.11b	6/2437	99.85%	1.002	0.587	0.284	0.06	18.54	19.00	1.112	0.316	22.1
Top side	802.11b	6/2437	99.85%	1.002	0.654	0.268	0.07	18.54	19.00	1.112	0.299	22.1
Bottom side	802.11b	6/2437	99.85%	1.002	0.108	0.054	0.06	18.54	19.00	1.112	0.060	22.1
Back side	802.11b	1/2412	99.85%	1.002	0.847	0.402	0.09	17.81	19.00	1.315	0.530	22.1
Back side	802.11b	11/2462	99.85%	1.002	0.722	0.341	-0.07	17.99	19.00	1.262	0.431	22.1
Wi-Fi 2.4G SAR Test Record MIMO												
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head&Body Test data (Separate 10mm)												
Front side	802.11n HT20M	6/2437	97.47%	1.026	0.066	0.037	0.04	20.00	20.50	1.123	0.076	22.1
Back side	802.11n HT20M	6/2437	97.47%	1.026	0.075	0.042	0.02	20.00	20.50	1.123	0.086	22.1
Left side	802.11n HT20M	6/2437	97.47%	1.026	0.095	0.053	0.03	20.00	20.50	1.123	0.109	22.1
Right side	802.11n HT20M	6/2437	97.47%	1.026	0.090	0.051	-0.09	20.00	20.50	1.123	0.104	22.1
Top side	802.11n HT20M	6/2437	97.47%	1.026	0.193	0.094	0.01	20.00	20.50	1.123	0.222	22.1
Bottom side	802.11n HT20M	6/2437	97.47%	1.026	0.040	0.023	0.03	20.00	20.50	1.123	0.046	22.1
Top side	802.11n HT20M	1/2412	97.32%	1.028	0.190	0.089	0.09	19.32	20.50	1.312	0.256	22.1
Top side	802.11n HT20M	11/2462	97.32%	1.028	0.238	0.108	0.04	19.42	20.50	1.284	0.314	22.1
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 10-g (W/kg)	Liquid Temp.(°C)
Extremity Test data (Separate 0mm)												
Front side	802.11n HT20M	6/2437	97.47%	1.026	0.253	0.128	0.06	20.00	20.50	1.123	0.148	22.1
Back side	802.11n HT20M	6/2437	97.47%	1.026	0.652	0.310	-0.03	20.00	20.50	1.123	0.357	22.1
Left side	802.11n HT20M	6/2437	97.47%	1.026	0.416	0.199	0.19	20.00	20.50	1.123	0.229	22.1
Right side	802.11n HT20M	6/2437	97.47%	1.026	0.349	0.180	-0.06	20.00	20.50	1.123	0.207	22.1
Top side	802.11n HT20M	6/2437	97.47%	1.026	1.150	0.485	0.06	20.00	20.50	1.123	0.559	22.1
Bottom side	802.11n HT20M	6/2437	97.47%	1.026	0.109	0.055	-0.03	20.00	20.50	1.123	0.063	22.1
Top side	802.11n HT20M	1/2412	97.32%	1.028	1.190	0.433	0.19	19.32	20.50	1.312	0.584	22.1
Top side	802.11n HT20M	11/2462	97.32%	1.028	1.040	0.434	-0.06	19.42	20.50	1.284	0.573	22.1



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8.2.2 SAR Result of WIFI 5G

Wi-Fi 5GSAR Test Record ANT0												
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head&Body Test Data U-NII-1 (Separate 10mm)												
Front side	802.11a	36/5180	98.83%	1.012	0.021	0.010	0.02	15.79	17.00	1.321	0.028	21.9
Back side	802.11a	36/5180	98.83%	1.012	0.151	0.055	-0.08	15.79	17.00	1.321	0.202	21.9
Left side	802.11a	36/5180	98.83%	1.012	0.046	0.021	0.03	15.79	17.00	1.321	0.062	21.9
Right side	802.11a	36/5180	98.83%	1.012	0.011	0.005	0.05	15.79	17.00	1.321	0.015	21.9
Top side	802.11a	36/5180	98.83%	1.012	0.686	0.190	0.04	15.79	17.00	1.321	0.917	21.9
Bottom side	802.11a	36/5180	98.83%	1.012	0.014	0.006	0.07	15.79	17.00	1.321	0.019	21.9
Top side	802.11a	40/5200	98.76%	1.013	0.682	0.187	0.07	15.53	17.00	1.403	0.969	21.9
Top side	802.11a	48/5240	98.83%	1.012	0.631	0.180	0.06	15.77	17.00	1.327	0.848	21.9
Head&Body Test Data U-NII-3 (Separate 10mm)												
Front side	802.11a	149/5745	98.82%	1.012	0.127	0.053	-0.04	16.51	17.00	1.119	0.144	22.4
Back side	802.11a	149/5745	98.82%	1.012	0.557	0.217	-0.12	16.51	17.00	1.119	0.631	22.4
Left side	802.11a	149/5745	98.82%	1.012	0.104	0.041	0.03	16.51	17.00	1.119	0.118	22.4
Right side	802.11a	149/5745	98.82%	1.012	0.081	0.022	0.03	16.51	17.00	1.119	0.092	22.4
Top side	802.11a	149/5745	98.82%	1.012	1.240	0.346	0.01	16.51	17.00	1.119	1.405	22.4
Bottom side	802.11a	149/5745	98.82%	1.012	0.016	0.006	0.07	16.51	17.00	1.119	0.018	22.4
Top side	802.11a	157/5785	98.83%	1.012	0.997	0.266	-0.10	15.15	17.00	1.531	1.545	22.4
Top side	802.11a	165/5825	98.76%	1.013	1.090	0.305	0.02	15.86	17.00	1.300	1.436	22.4
Top side with repeat	802.11a	149/5745	98.82%	1.012	1.190	0.315	-0.08	16.51	17.00	1.119	1.348	22.4
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 10-g (W/kg)	Liquid Temp.(°C)
Extremity Test data U-NII-1 (Separate 0mm)												
Front side	802.11a	36/5180	98.83%	1.012	0.131	0.048	-0.02	15.79	17.00	1.321	0.064	21.9
Back side	802.11a	36/5180	98.83%	1.012	0.438	0.151	0.06	15.79	17.00	1.321	0.202	21.9
Left side	802.11a	36/5180	98.83%	1.012	0.117	0.045	0.07	15.79	17.00	1.321	0.060	21.9
Right side	802.11a	36/5180	98.83%	1.012	0.062	0.016	0.01	15.79	17.00	1.321	0.021	21.9
Top side	802.11a	36/5180	98.83%	1.012	3.320	0.871	-0.09	15.79	17.00	1.321	1.165	21.9
Bottom side	802.11a	36/5180	98.83%	1.012	0.038	0.009	0.01	15.79	17.00	1.321	0.012	21.9
Top side	802.11a	40/5200	98.76%	1.013	5.150	1.070	0.09	15.53	17.00	1.403	1.521	21.9
Top side	802.11a	48/5240	98.83%	1.012	6.320	1.180	0.18	15.77	17.00	1.327	1.585	21.9
Extremity Test data U-NII-3 (Separate 0mm)												
Front side	802.11a	149/5745	98.82%	1.012	0.270	0.103	-0.16	16.51	17.00	1.119	0.117	22.4
Back side	802.11a	149/5745	98.82%	1.012	1.320	0.420	0.07	16.51	17.00	1.119	0.476	22.4
Left side	802.11a	149/5745	98.82%	1.012	0.796	0.224	0.05	16.51	17.00	1.119	0.254	22.4
Right side	802.11a	149/5745	98.82%	1.012	0.118	0.026	0.09	16.51	17.00	1.119	0.029	22.4
Top side	802.11a	149/5745	98.82%	1.012	5.420	1.240	-0.19	16.51	17.00	1.119	1.405	22.4
Bottom side	802.11a	149/5745	98.82%	1.012	0.062	0.020	0.04	16.51	17.00	1.119	0.023	22.4



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Top side	802.11a	157/5785	98.83%	1.012	5.490	1.130	0.11	15.15	17.00	1.531	1.751	22.4
Top side	802.11a	165/5825	98.76%	1.013	4.450	0.983	0.09	15.86	17.00	1.300	1.295	22.4
Wi-Fi 5G SAR Test Record ANT1												
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head&Body Test Data U-NII-1 (Separate 10mm)												
Front side	802.11a	36/5180	98.83%	1.012	0.059	0.026	0.04	16.19	17.00	1.205	0.072	21.9
Back side	802.11a	36/5180	98.83%	1.012	0.283	0.098	0.01	16.19	17.00	1.205	0.345	21.9
Left side	802.11a	36/5180	98.83%	1.012	0.023	0.010	0.04	16.19	17.00	1.205	0.028	21.9
Right side	802.11a	36/5180	98.83%	1.012	0.151	0.061	0.02	16.19	17.00	1.205	0.184	21.9
Top side	802.11a	36/5180	98.83%	1.012	0.159	0.068	0.01	16.19	17.00	1.205	0.194	21.9
Bottom side	802.11a	36/5180	98.83%	1.012	0.027	0.011	0.08	16.19	17.00	1.205	0.033	21.9
Back side	802.11a	40/5200	98.76%	1.013	0.274	0.096	0.09	15.99	17.00	1.262	0.350	21.9
Back side	802.11a	48/5240	98.83%	1.012	0.213	0.079	0.04	15.83	17.00	1.309	0.282	21.9
Head&Body Test Data U-NII-3 (Separate 10mm)												
Front side	802.11a	149/5745	98.82%	1.012	0.114	0.051	0.03	16.17	17.00	1.211	0.140	22.4
Back side	802.11a	149/5745	98.82%	1.012	0.272	0.101	0.01	16.17	17.00	1.211	0.333	22.4
Left side	802.11a	149/5745	98.82%	1.012	0.108	0.047	0.04	16.17	17.00	1.211	0.132	22.4
Right side	802.11a	149/5745	98.82%	1.012	0.055	0.022	0.05	16.17	17.00	1.211	0.067	22.4
Top side	802.11a	149/5745	98.82%	1.012	0.457	0.184	0.09	16.17	17.00	1.211	0.560	22.4
Bottom side	802.11a	149/5745	98.82%	1.012	0.076	0.032	0.09	16.17	17.00	1.211	0.093	22.4
Top side	802.11a	157/5785	98.83%	1.012	0.471	0.190	0.04	16.07	17.00	1.239	0.590	22.4
Top side	802.11a	165/5825	98.76%	1.013	0.542	0.214	0.01	16.07	17.00	1.239	0.680	22.4
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 10-g (W/kg)	Liquid Temp.(°C)
Extremity Test data U-NII-1 (Separate 0mm)												
Front side	802.11a	36/5180	98.83%	1.012	0.179	0.067	0.01	16.19	17.00	1.205	0.082	21.9
Back side	802.11a	36/5180	98.83%	1.012	1.140	0.292	0.14	16.19	17.00	1.205	0.356	21.9
Left side	802.11a	36/5180	98.83%	1.012	0.050	0.020	0.09	16.19	17.00	1.205	0.024	21.9
Right side	802.11a	36/5180	98.83%	1.012	0.841	0.228	0.06	16.19	17.00	1.205	0.278	21.9
Top side	802.11a	36/5180	98.83%	1.012	0.984	0.314	0.07	16.19	17.00	1.205	0.383	21.9
Bottom side	802.11a	36/5180	98.83%	1.012	0.050	0.017	0.03	16.19	17.00	1.205	0.020	21.9
Top side	802.11a	40/5200	98.76%	1.013	1.020	0.333	0.09	15.99	17.00	1.262	0.426	21.9
Top side	802.11a	48/5240	98.83%	1.012	0.876	0.309	0.08	15.83	17.00	1.309	0.409	21.9
Extremity Test data U-NII-3 (Separate 0mm)												
Front side	802.11a	149/5745	98.82%	1.012	0.427	0.167	0.09	16.17	17.00	1.211	0.205	22.4
Back side	802.11a	149/5745	98.82%	1.012	1.050	0.353	0.04	16.17	17.00	1.211	0.432	22.4
Left side	802.11a	149/5745	98.82%	1.012	0.241	0.090	0.07	16.17	17.00	1.211	0.110	22.4
Right side	802.11a	149/5745	98.82%	1.012	0.185	0.059	0.09	16.17	17.00	1.211	0.072	22.4
Top side	802.11a	149/5745	98.82%	1.012	1.680	0.559	0.05	16.17	17.00	1.211	0.685	22.4
Bottom side	802.11a	149/5745	98.82%	1.012	0.155	0.063	0.09	16.17	17.00	1.211	0.077	22.4
Top side	802.11a	157/5785	98.83%	1.012	1.790	0.620	0.09	16.07	17.00	1.239	0.777	22.4
Top side	802.11a	165/5825	98.76%	1.013	2.150	0.707	0.02	16.07	17.00	1.239	0.887	22.4



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SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

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Wi-Fi 5G SAR Test Record MIMO												
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head&Body Test Data U-NII-1 (Separate 10mm)												
Front side	802.11ac 80M	42/5210	91.98%	1.087	0.065	0.028	0.04	18.68	19.50	1.209	0.086	21.9
Back side	802.11ac 80M	42/5210	91.98%	1.087	0.208	0.076	0.05	18.68	19.50	1.209	0.273	21.9
Left side	802.11ac 80M	42/5210	91.98%	1.087	0.058	0.026	0.05	18.68	19.50	1.209	0.076	21.9
Right side	802.11ac 80M	42/5210	91.98%	1.087	0.169	0.068	0.01	18.68	19.50	1.209	0.222	21.9
Top side	802.11ac 80M	42/5210	91.98%	1.087	0.573	0.181	0.05	18.68	19.50	1.209	0.753	21.9
Bottom side	802.11ac 80M	42/5210	91.98%	1.087	0.050	0.021	-0.06	18.68	19.50	1.209	0.065	21.9
Head&Body Test Data U-NII-3 (Separate 10mm)												
Front side	802.11ac 80M	155/5775	91.51%	1.093	0.117	0.051	0.02	18.23	19.50	1.340	0.171	22.4
Back side	802.11ac 80M	155/5775	91.51%	1.093	0.568	0.216	0.09	18.23	19.50	1.340	0.832	22.4
Left side	802.11ac 80M	155/5775	91.51%	1.093	0.130	0.044	0.04	18.23	19.50	1.340	0.190	22.4
Right side	802.11ac 80M	155/5775	91.51%	1.093	0.260	0.103	0.03	18.23	19.50	1.340	0.381	22.4
Top side	802.11ac 80M	155/5775	91.51%	1.093	0.851	0.270	0.08	18.23	19.50	1.340	1.246	22.4
Bottom side	802.11ac 80M	155/5775	91.51%	1.093	0.052	0.018	0.01	18.23	19.50	1.340	0.076	22.4
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 10-g (W/kg)	Liquid Temp.(°C)
Extremity Test data U-NII-1 (Separate 0mm)												
Front side	802.11ac 80M	42/5210	91.98%	1.087	0.154	0.060	0.03	18.68	19.50	1.209	0.079	21.9
Back side	802.11ac 80M	42/5210	91.98%	1.087	0.767	0.209	-0.04	18.68	19.50	1.209	0.275	21.9
Left side	802.11ac 80M	42/5210	91.98%	1.087	0.120	0.535	0.05	18.68	19.50	1.209	0.703	21.9
Right side	802.11ac 80M	42/5210	91.98%	1.087	0.814	0.244	0.06	18.68	19.50	1.209	0.321	21.9
Top side	802.11ac 80M	42/5210	91.98%	1.087	5.860	1.200	0.02	18.68	19.50	1.209	1.577	21.9
Bottom side	802.11ac 80M	42/5210	91.98%	1.087	0.065	0.024	0.06	18.68	19.50	1.209	0.032	21.9
Extremity Test data U-NII-3 (Separate 0mm)												
Front side	802.11ac 80M	155/5775	91.51%	1.093	0.333	0.126	-0.09	18.23	19.50	1.340	0.184	22.4
Back side	802.11ac 80M	155/5775	91.51%	1.093	1.010	0.357	0.04	18.23	19.50	1.340	0.523	22.4
Left side	802.11ac 80M	155/5775	91.51%	1.093	0.555	0.174	0.01	18.23	19.50	1.340	0.255	22.4
Right side	802.11ac 80M	155/5775	91.51%	1.093	0.629	0.234	0.08	18.23	19.50	1.340	0.343	22.4
Top side	802.11ac 80M	155/5775	91.51%	1.093	4.660	1.030	-0.04	18.23	19.50	1.340	1.508	22.4
Bottom side	802.11ac 80M	155/5775	91.51%	1.093	0.102	0.043	0.06	18.23	19.50	1.340	0.063	22.4



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8.2.3 SAR Result of BT

Bluetooth SAR Test Record ANT0												
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 1-g (W/kg)	Liquid Temp.(°C)
Head&Body Test Data (10mm)												
Front side	DH5	0/2402	76.97%	1.299	0.004	0.001	0.07	9.90	11.00	1.288	0.006	22.3
Back side	DH5	0/2402	76.97%	1.299	0.011	0.005	0.01	9.90	11.00	1.288	0.019	22.3
Left side	DH5	0/2402	76.97%	1.299	0.008	0.004	0.18	9.90	11.00	1.288	0.013	22.3
Right side	DH5	0/2402	76.97%	1.299	0.006	0.002	0.06	9.90	11.00	1.288	0.009	22.3
Top side	DH5	0/2402	76.97%	1.299	0.020	0.009	0.13	9.90	11.00	1.288	0.034	22.3
Bottom side	DH5	0/2402	76.97%	1.299	0.002	0.001	0.05	9.90	11.00	1.288	0.003	22.3
Top side	DH5	39/2441	76.99%	1.299	0.019	0.007	0.06	9.47	11.00	1.422	0.035	22.3
Top side	DH5	78/2480	77.09%	1.297	0.034	0.136	0.05	9.41	11.00	1.442	0.063	22.3
Test position	Test mode	Test ch./Freq.	Duty Cycle	Duty Cycle Scaled factor	SAR (W/kg) 1-g	SAR (W/kg) 10-g	Power drift (dB)	Conducted Power(dBm)	Tune up Limit(dBm)	Scaled factor	Scaled SAR 10-g (W/kg)	Liquid Temp.(°C)
Extremity Test data (Separate 0mm)												
Front side	DH5	0/2402	76.97%	1.299	0.017	0.007	0.09	9.90	11.00	1.288	0.012	22.3
Back side	DH5	0/2402	76.97%	1.299	0.042	0.017	0.12	9.90	11.00	1.288	0.028	22.3
Left side	DH5	0/2402	76.97%	1.299	0.035	0.019	0.05	9.90	11.00	1.288	0.032	22.3
Right side	DH5	0/2402	76.97%	1.299	0.007	0.002	0.06	9.90	11.00	1.288	0.004	22.3
Top side	DH5	0/2402	76.97%	1.299	0.190	0.063	0.04	9.90	11.00	1.288	0.105	22.3
Bottom side	DH5	0/2402	76.97%	1.299	0.013	0.005	0.08	9.90	11.00	1.288	0.008	22.3
Top side	DH5	39/2441	76.99%	1.299	0.191	0.061	0.07	9.47	11.00	1.422	0.112	22.3
Top side	DH5	78/2480	77.09%	1.297	0.298	0.096	0.18	9.41	11.00	1.442	0.179	22.3

8.3 Multiple Transmitter Evaluation

8.2.1 Simultaneous SAR test evaluation

NO.	Simultaneous Transmission Configuration	Head & Body	Extremity
1	BT + WIFI 2.4GHz	Yes	Yes
2	BT + WIFI 5G	Yes	Yes

8.2.2 Simultaneous Transmission SAR Summation Scenario for Head & Body

10mm

Test position									Summed SAR	
		WiFi 2.4G ANT0	WiFi 2.4G ANT1	WiFi 2.4G MIMO	WiFi 5G ANT0	WiFi 5G ANT1	WiFi 5G MIMO	BT Ant0		
		1	2	3	4	5	6	7	2+7	5+7
WLAN	Front side	0.145	0.047	0.076	0.144	0.140	0.171	0.006	0.053	0.146
	Back side	0.118	0.153	0.086	0.631	0.350	0.832	0.019	0.172	0.369
	Left side	0.133	0.018	0.109	0.118	0.132	0.190	0.013	0.031	0.145
	Right side	0.016	0.128	0.104	0.092	0.184	0.381	0.009	0.137	0.193
	Top side	0.222	0.117	0.314	1.545	0.680	1.246	0.063	0.180	0.743
	Bottom side	0.033	0.038	0.046	0.019	0.093	0.076	0.003	0.041	0.096

8.2.3 Simultaneous Transmission SAR Summation Scenario for Extremity

0mm

Test position									Summed SAR	
		WiFi 2.4G ANT0	WiFi 2.4G ANT1	WiFi 2.4G MIMO	WiFi 5G ANT0	WiFi 5G ANT1	WiFi 5G MIMO	BT Ant0		
		1	2	3	4	5	6	7	2+7	5+7
WLAN	Front side	0.240	0.065	0.148	0.117	0.205	0.184	0.012	0.077	0.217
	Back side	0.262	0.530	0.357	0.476	0.432	0.523	0.028	0.558	0.460
	Left side	0.326	0.030	0.229	0.254	0.110	0.703	0.032	0.062	0.142
	Right side	0.030	0.316	0.207	0.029	0.278	0.343	0.004	0.320	0.282
	Top side	0.782	0.299	0.584	1.751	0.887	1.577	0.179	0.478	1.066
	Bottom side	0.068	0.060	0.063	0.023	0.077	0.063	0.008	0.068	0.085

9 Equipment list

Test Platform		SPEAG DASY Professional				
Description		SAR Test System (Frequency range 300MHz-6GHz)				
Software Reference		DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)				
Hardware Reference						
Equipment		Manufacturer	Model	Inventory No.	Calibration Date	Due date of calibration
☒	Test Phantom	SPEAG	SAM Twin	SZ-WSR-A-020	NCR	NCR
☒	DAE	SPEAG	DAE4	SZ-WSR-M-081	2024/8/15	2025/8/15
☒	E-Field Probe	SPEAG	EX3DV4	SZ-WSR-M-082	2024/9/19	2025/9/18
☒	Validation Kits	SPEAG	D2450V2	SZ-WSR-M-039	2022/11/02	2025/11/01
☒	Validation Kits	SPEAG	D5GHzV2	SZ-WSR-M-046	2022/11/01	2025/10/31
☒	Dielectric parameter probes	SPEAG	DAKS-3.5	SZ-WSR-M-053	2024/06/26	2025/06/25
☒	Vector Network Analyzer and Vector Reflectometer	SPEAG	DAKS_VNA R140	SZ-WSR-M-054	2024/06/26	2025/06/25
☒	RF Bi-Directional Coupler	Agilent	86205-60001	SZ-WSR-A-004	NCR	NCR
☒	Signal Generator	Agilent	N5171B	SZ-WSR-M-006	2024/01/30	2025/01/29
☒	Preamplifier	Mini-Circuits	ZHL-42W	SZ-WSR-A-001	NCR	NCR
☒	Preamplifier	Compliance Directions Systems Inc.	AMP28-3W	SZ-WSR-A-002	NCR	NCR
☒	Power Meter	Agilent	E4416A	SZ-WSR-M-007	2024/01/30	2025/01/29
☒	Power Sensor	Agilent	8481H	SZ-WSR-M-008	2024/01/30	2025/01/29
☒	Power Sensor	R&S	NRP-Z92	SZ-WSR-M-009	2024/01/30	2025/01/29
☒	Attenuator	SHX	TS2-3dB	SZ-WSR-A-012	NCR	NCR
☒	Speed reading thermometer	Zhengzhou Boyang Instrument	TP3001	SZ-WSR-M-014	2024/05/30	2025/05/29
☒	Temperature	MingGao	T809	SZ-WSR-M-015	2024/05/30	2025/05/29
☒	Temperature	MingGao	T809	SZ-WSR-M-016	2024/05/30	2025/05/29
☒	Humidity and Temperature Indicator	CHIGAO	HTC-1	SZ-WSR-M-013	2024/05/28	2025/05/27

Note: All the equipment are within the valid period when the tests are performed.



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10 Calibration certificate

Please see the Appendix C

11 Photographs

Please see the Appendix D

Appendix A: Detailed System Check Results

Appendix B: Detailed Test Results

Appendix C: Calibration certificate

Appendix D: Photographs

--- End of report ---

